

APPENDIX B Revised 6/18/04

GUIDELINES FOR PROPOSAL PREPARATION AND SUBMISSION

B.1 General Guidelines

The following guidelines apply to the preparation of proposals by investigators in response to this AO. The material presented is a guide only and it is not intended to be all encompassing. The proposer should provide information relative to those items that are applicable or as otherwise required by this AO.

In order to provide a firm basis for the uniform evaluation of proposals received in response to this AO, the information concerning the Lunar Reconnaissance Orbiter (LRO) capabilities and constraints, the expected flight environments, the ground system capabilities and constraints, and the requirements for data archiving, as described in the LRO Proposal Information Package (PIP), must be used for proposal preparation (for information on accessing the PIP, see Section 3.0 of this AO).

The proposal must consist of a single bound volume with readily identified sections. All documents must be typewritten in English, use metric units, and be clearly legible. Proposals must be printed on 8.5 x 11 inches or A4 European standard stock. Proposals may contain foldouts up to 11 x 17 inches (or European equivalent), but such foldouts count as two pages each, or four pages if printed on both sides, against the page limits (see Tables 1 below). Proposals may not reference a World Wide Web site for any data or material needed to understand or evaluate the proposal, nor may any additional material be submitted by any type of electronic medium such as audio tape, videotape, floppy disk, CD, etc., unless otherwise requested in this AO.

Single- or double-column format is acceptable. In complying with the page limit, the margins all around must be at least one inch (2.5 cm) wide or wider, and the type font must not be smaller than 12-point, i.e., ≤ 15 characters per inch (note that if A4 paper is used, the bottom margin must be at least 4.5 cm). Figure captions must be in 12-point font, although text in the figures and in cost tables may contain smaller font as long as they are easily legible.

In order to allow for recycling of proposals, all proposals and copies must be submitted on plain white paper only (e.g., no cardboard stock or plastic covers, no colored paper, etc.). Photographs and color figures are permitted if printed on recyclable white paper. The signed original proposal (including cover page, certifications, and non-U.S. endorsements) must be bound in a manner that allows for easy to disassembly for reproduction. Except for the original copy, two-sided copies are preferred. Every page side upon which printing appears will be counted against the page limits. The other copies for review must be stapled but not otherwise bound. A searchable, PDF-formatted, exact duplicate of the proposal must be provided on Compact Disc-Read Only Memory (CD-ROM) and attached to the proposal in a way that allows for easy access as well as retention.

In all proposals, a measurement investigation must be clearly defined. The description of any proposed instrumentation must provide adequate technical information to permit evaluation of both the concept and the practical feasibility of the investigation in terms of the LRO spacecraft resources, configurations, or special requirements necessary for successful implementation. Although many of the details of the LRO program data management procedures are not yet established, the proposal must contain the best possible description of the proposer's plans for data processing, management, and archiving, including costs, especially those for unique data management hardware and software.

B.2 Contents of Proposals

Two types of information are requested for all proposals (as described below): data for evaluation purposes and data that will be used to initiate initial contracts with the selected proposal teams. All information, however, must be consistent and, in fact, the data needed for contracts may also be used for evaluation. Each proposal must be submitted as a single bound document that contains, in addition to the *Cover Page* (see further below), a Table of Contents and a Fact Sheet, four parts as indicated in Table 1 below:

Part 1: Measurement Investigation and Implementation;

Part 2: Management, Schedule, and Cost;

Part 3: Plans for Education/Public Outreach, and Small Disadvantaged Business and Minority Education Institution; and

Part 4: Appendices (only as allowed).

Proposers must submit a separate proposal for each instrument proposed. If the proposed instrument is to accomplish multiple measurement objectives as outlined in Section 2 of this AO, the proposal must make clear how the proposal can be descoped if a single rather than multiple measurement objectives are selected.

Table 1. Page Limits for Investigations Providing Flight Instrumentation.

Section of Proposal	Page Limit
Cover Page/Investigation Summary	Printed from web site http://proposals.hq.nasa.gov
Table of Contents	1 p
Proposal Summary Fact Sheet	2 pp
Part 1: Measurement Investigation and Implementation	25 pp
Part 2: Management, Schedule, and Cost	25 pp
Part 3: Plans for E/PO, and Small Disadvantaged Business/Minority Educational Institutions	E/PO: 4 pp text + budget sheets; 1pp for SDB/MEI commitments.
Part 4: APPENDICES (no others permitted) 1. Cost and Budget Tables and Supporting Data 2. Resumes (2 pages maximum each) 3. Statements of Commitment from Co-Is 4. Letters of Endorsement for Non-OSS organizations (including foreign entities) 5. Draft International Participation Plan and Discussion on Compliance with U.S. Export Laws and Regulations 6. Summary of Proposal Cooperative Contributions 7. Cost and Pricing Data and Documentation for Contract Implementation 8. Contractual Statement(s) of Work 9. Instrument Accommodation Requirements Summary 10. NASA PI Hardware Selection Process (only required for proposals having a NASA PI) 11. References Used for Proposal Preparation (as appropriate) 12. Abbreviations and Acronyms	No page limits but minimum size encouraged.

B.2.1 Cover Page/Investigation Summary

A *Cover Page/Investigation Summary* is an integral part of the proposal and is generated by accessing the Web site located at <http://proposals.hq.nasa.gov> and filling in the requested information. It is then both printed out in hard copy for submission with the proposal, as well as submitted electronically to that Web site. The *Cover Page* form requires the full names of the Principal Investigator (PI) and the authorizing institutional official, their addresses with zip code, telephone and fax numbers, and electronic mail addresses, as well as the names, institutions, and E-mail addresses of all participants, and the total NASA Office of Space Science (OSS) Cost. The *Investigation Summary* form provides the equivalent of about one-half page of space for a brief description of the

intended measurement investigation, as well as a brief statement of the objectives for Education/Public Outreach. Note that NASA enters the Summaries of all investigations selected for its various programs into a publicly accessible database. Therefore, the *Investigation Summary* should not contain any proprietary or confidential information that the submitter wishes to protect from public disclosure.

Proposers must not reformat this *Cover Page/ Investigation Summary* after it is printed, since the information thereon is automatically entered into NASA's main data base for the proposal. This form may be accessed for editing of submitted material up to the time of the proposal submission deadline by following the instructions at this Web site. Proposers without access to the Web or who experience difficulty in using this site may contact the Help Desk by E-mail at proposals@hq.nasa.gov for assistance. Finally, note that submission of the electronic *Cover Page/ Investigation Summary* does not satisfy the deadline for proposal submission.

The printed copy of this *Cover Page* that is submitted with the proposal must be signed by the PI and by the official of the investigator's organization who is authorized to commit the organization to the completion of the investigation should it be selected. This authorizing signature now also certifies that the proposing institution has read and is in compliance with the three required certifications discussed in Section 7 and shown in Appendix D of this AO; therefore, these certifications do not need to be submitted separately.

B.2.2 Table of Contents

The proposal must contain a Table of Contents that parallels the outline provided below in Sections B.2.3 through B.2.7

B.2.3 Investigation Summary Fact Sheet

The Investigation Summary Fact Sheet provides a brief description, including a table listing the major instrument parameters or specifications, of the proposed investigation. The information conveyed on this Fact Sheet should include the following: measurement objectives, schematic description of the proposed instrumentation (including figures or drawings at the proposer's discretion), objectives for Education/Public Outreach and new technology, operations overview (including how measurement operations fit with major mission characteristics), instrument project management overview (including teaming arrangement as known), schedule, and cost estimate. This Fact Sheet is restricted to two pages (preferably a double-sided single sheet).

B.2.4 Part 1: Measurement Investigation and Implementation

Part 1 of the proposal must address the proposed measurement investigation and the proposed measurement implementation. The proposal should contain enough background information to be meaningful to a reviewer who is generally familiar with the

field, although not necessarily a specialist. The main body of Part 1 will generally contain the following:

MEASUREMENT INVESTIGATION

This section of Part 1 provides an overview of the investigation being proposed, including how this investigation meets the measurement objective(s) in the AO by tracing how the measurement goals and objectives are traceable to the investigation requirements and implementation. This section must also be responsive to the evaluation criteria for Exploration Merit as described in Section 7.1 of this AO.

Measurement Goals and Objectives. This section must discuss the goals and objectives of the investigation; their value to one or more of the measurement objectives and investigations of the LRO mission and the overall objectives of the Lunar Exploration program in general; and their relationships to past, present, and future investigations and missions. It must provide a full description of the concept of the proposed investigation and the method and procedures for carrying out the investigation, including such factors as its relationship to past and any current or future efforts.

Measurement Requirements. This part should indicate in detail the kinds of measurements to be made during the mission that will be needed to carry out the proposed investigation objectives, the experiment concept for obtaining these data, and how these data would be analyzed once obtained (for example, comparison with current data or models, the production of geological maps, etc.). The measurement requirements for the investigation must be explicitly defined and be linked to the measurement objectives described in this AO. The relationship between the data products generated and the measurement objectives of the proposed investigation must be explicitly described. The quality of the data to be returned (resolution, coverage, pointing accuracy, measurement precision, etc.) and the quantity of data (bits, images, etc.) should be clearly defined, justified, and linked quantitatively to the measurement objectives. The improvement over current knowledge that the results of the investigation are expected to provide must be clearly stated. As appropriate, the proposal should indicate how the investigation relates to other mission investigations as solicited in this AO, and the specific approach being taken to coordinate measurement goals and/or to share instrument hardware.

MEASUREMENT IMPLEMENTATION

This section of Part 1 of the proposal provides a full description of the experiment hardware and software proposed to be supplied that will produce the data necessary to complete the activities described in the Investigation, including all information necessary to plan for its design, development, integration, test, ground operations, and flight operations. The proposal must describe the technical approach for every element of the investigation to ensure that the investigation's requirements do not

exceed available accommodation and/or financial resources. This section of Part 1 must be responsive to the evaluation criteria of Technical Feasibility, as well as some parts of the evaluation criteria for Implementation Risk as discussed in Section 7.1 of this AO. This section must be complete without the need for additional information for its full understanding, however, references to data or information in other Parts or Sections is acceptable to avoid redundancy.

Payload Instrumentation Description. The proposal must fully describe the proposed flight instrumentation, including any associated mechanisms, deployments and/or pointing devices. Performance requirements should be directly related to the stated investigation objectives. Strategies for any type of data compression that may be implemented should be discussed clearly. The proposal should describe any technology developments that are anticipated for development of the instrument and also describe backup strategies in the event that the expected technologies do not become available. The proposal should also describe any recognized need for supporting laboratory research or ground-based, airborne, or other activities required to support development of the instrument and/or its operation during the mission.

The proposal must outline hardware or software items proposed for development, as well as any existing instrumentation or design/flight heritage to be used. The heritage of various components of the instrument, supporting systems, and software must be clearly described. Note that, for any level of heritage claimed, cost information about the referenced sources of heritage will also be required in the section on cost-estimating methodology.

As a minimum, preliminary description of the instrument design with a block diagram showing the components, subsystems, and their interfaces must be included. In the case of a new or not yet space-qualified design, the instrument component or system must, to the extent possible, be compared based on performance, complexity, and cost to existing instruments.

The proposal shall provide a fabrication, test, and calibration concept by describing a fabrication plan, a test and verification plan, and a calibration plan at the instrument and component level. The proposal shall address any impacts in order to produce the required flight hardware and software, including but not limited to, the areas of facilities, work force, schedule, manufacturability, validation, and verification. Instrument/component testing and calibration during flight must also be described. The proposal shall include a flow diagram indicating order of assembly and tests. The description of the test concept shall include a verification matrix that describes the tests that are to be performed on components, development units, and subassemblies.

Payload/Instrument Integration. The proposal must describe all parameters of the instrumentation that are pertinent to its accommodation within the

resources and configuration of the spacecraft, as described in this AO and the PIP. This information must be given in sufficient detail to permit an evaluation of both the concept and the feasibility of the instrumentation. These resources include, but are not limited to, volumetric envelope, mass, power, thermal limits, telemetry and command requirements, environmental sensitivities (e.g., to electromagnetic fields, gaseous effluences, organic contamination, etc.); any special integration constraints; pointing requirements; and onboard data processing. Mass, power, and data processing budgets should be provided. The power discussion must outline average and peak usage and provide a time profile of the power needs.

The instrument component level reserves for resources such as mass, telemetry, and power must be identified, including the allocation of reserves and margin to the instrument level. By way of definition, *contingency* (or *reserve*), when added to the current best estimate of the resource, results in the maximum expected value for that resource. Percent contingency (reserve) is the value of the contingency (reserve) divided by the value of the resource less the contingency (reserve).

Example: An instrument has an allowable maximum expected value of 40 kg that includes 5 kg of reserve. The percent reserve is 5 kg divided by 35 kg (i.e., 40 minus 5) or 14%.

This section must include an illustration with key dimensions of the proposed instrument and any ancillary hardware that would be integrated onto the spacecraft. Additional descriptions of accommodation details are described in the PIP.

Since the instrument locations and the interface approaches are not finalized, proposers must identify possible electrical, mechanical, and data interfaces based on information provided in the PIP. In addition, the preferred location of the instrument/component itself on the spacecraft must be described. Where more than one choice is available, proposers must identify and justify their preference. Proposals must include a discussion of the requirements of the instrument/component data rate (peak and average), field of view, resolution, sensitivity, pointing accuracy, average data volume per day, etc. A summary of the investigation's accommodation requirements must be provided in its Appendix 9 per Table 6 (see below). Explicit guidelines for providing these requirements can be found in the PIP.

Ground Operations. The proposals shall describe all requirements for pre- and post-launch ground operations support, site implementation, and configuration control. In particular, proposals must include an estimate of the cost of developing and maintaining a measurement operations facility at the Principal Investigator's home institution, including any support equipment (see Section 5.8 of this AO).

Flight Operations. The proposals shall describe all requirements for flight operations support, including instrument testing, calibration, and mission planning, including any special communications or near real-time ground support requirements, and indicate any special equipment or skills required of ground personnel.

Data Reduction and Validation. The proposals shall discuss the data reduction and validation plan, including a definition of archival data products and, insofar as possible, the method of their production and expected format. Proposals shall include an estimate of the cost of (ground) processor capabilities required for data reduction, validation, analysis, and archiving. The data plan should include discussion of the volume and timing of data for early release, a schedule for the submission of validated archival products to the Planetary Data System (PDS), and the plan for submission of final interpretive papers to the peer-reviewed literature, with an estimate of the costs for these activities (see Section 5.9 of this AO and the PIP).

Roles and Responsibilities. The proposals shall describe specific roles and responsibilities of the PI and of each Co-Investigator, along with a time-phasing of their activities. Every named participant must have an identified, specific function that makes a demonstrable contribution to the development and/or implementation of the investigation. A condensed description of all prospective participants' relevant background, experience, and selected publications (if appropriate) should be provided (note: this requirement is not displaced by the resumes specified below in this appendix).

B.2.5 Part 2: Management, Schedule, and Cost

This Part of the proposal contains at least three sections (Management, Schedule, and Cost) and sets forth the investigator's approach for implementing the investigation. It should, in particular, provide a discussion regarding the management of the work, the recognition of essential management functions, and the overall integration of these functions in order to meet the established review and delivery dates while controlling costs. When necessary or to avoid duplication, references can be made to other parts, sections, charts, and information.

1. Management

This section of the proposal must provide insight into the organization proposed for implementing the investigation, including the distribution of the work, the internal operations and lines of authority with delegations, together with internal interfaces and relationships with NASA, major subcontractors, and associated investigators.

Work Breakdown Structure. A Work Breakdown Structure (WBS) shall be defined in this part of the proposal that clearly links the investigation organization

with the cost information in the Cost Plan (see Section B.2.5 of this Appendix). At a minimum, the elements of the proposed WBS should include the following that also need to be reflected in the Total Investigation Cost Funding Profile (see Section B.2.7 below, Tables 2, 3, and 4):

- 1.0 Management**
 - 1.1 Management Staff
 - 1.2 Travel
 - 1.3 Reviews
 - 1.4 Mission Assurance
 - 1.5 Measurement Investigations
 - 1.5.1 PI Support
 - 1.5.2 Co-I #1
 - 1.5.3 Co-I #2
 - 1.5.4 Co-I #3
 - 1.5.6 Etc.
 - 1.6 Reserves
- 2.0 Systems Engineering**
- 3.0 Development**
 - 3.1 Design and Fabrication
 - 3.1.1 Instrument Subsystem #1
 - 3.1.2 Instrument Subsystem #2
 - 3.1.3 Instrument Subsystem #3
 - 3.1.4 Etc.
 - 3.2 Integration and Test
 - 3.2.1 Instrument Assembly
 - 3.2.2 Functional Test
 - 3.2.3 Environmental Test
 - 3.2.4 Calibration
- 4.0 Post Delivery Support**
 - 4.1 Engineering Model Integration and Test Support
 - 4.2 Flight Model Integration and Test (ATLO) Support
- 5.0 Education and Public Outreach**
- 6.0 Mission Operations and Data Analysis**
 - 6.1 Mission Operations Development
 - 6.2 Mission Operations Support
 - 6.3 Measurement Data Analysis
- 7.0 Measurement Data Processing**
 - 7.1 Computers, Data Communications and SA Support
 - 7.2 Algorithms and Software: flight and ground

Additional sub-elements and breakdowns to better describe the proposed investigation may be added at the discretion of the proposer.

Implementation Approach. This section of the proposal should summarize the investigator's proposed approach for implementing the complete investigation by

discussing the management organization (which should be illustrated with an organization chart), the decision-making process, and the teaming arrangements. The responsibilities of team members, including contributors and institutional commitments should be discussed. Unique capabilities that each team member organization brings to the team, as well as previous experience with similar systems and equipment, should be addressed. U.S. investigations that include cooperative arrangements with foreign entities must be structured on the basis of no exchange of funds (see Section 5.11).

Roles and Responsibilities. The proposal must describe the specific roles and responsibilities of the PI, Instrument Project Manager (IPM) and E/PO lead. If key project personnel (e.g., the IPM, Systems Engineer, E/PO lead, etc.) are identified, their experience and qualifications should be cited here and/or in their resumes. Risk management and risk mitigation plans must be described, including the top three to five risks, descoping strategies (if relevant), and management strategies for control, allocation and release of technical, cost, and schedule reserves. When significant subcontracts are required, the acquisition strategy, including the anticipated date and length of the subcontract, and the use of performance or other incentives, should be described.

Licenses or Exemptions. The transfer of technical data or hardware to foreign parties may require export licenses or exemptions. In some cases, Technical Assistance Agreements may be needed by U.S. entities to work with foreign partners. The proposal should outline plans to meet these requirements, where applicable.

Method of Instrument Acquisition. The proposal shall describe the proposed method of instrument acquisition including the following, as applicable:

- (i) Rationale for the investigator to obtain the payload instrument through or by the investigator's institution.
- (ii) Method and basis for the selection of the proposed payload instrument fabricator.
- (iii) Unique or proprietary capabilities of the payload instrument fabricator that are not available from any other source.
- (iv) Contributions or characteristics of the proposed fabricator's payload instrument that make it an inseparable part of the investigation.
- (v) Availability of supporting personnel in the institution to successfully administer the payload instrument contract and technically monitor the fabrication.
- (vi) Status of development of the payload instrument, e.g., what additional development is needed, areas that need further design or in which unknowns are present, and backup options for any function or hardware requiring technology development.
- (vii) Method(s) by which it is proposed to:
 - (a) Prepare payload instrument hardware and software specifications;

- (b) Review development progress and maintain configuration control;
- (c) Review design and fabrication changes;
- (d) Participate in testing program;
- (e) Participate in final checkout and calibration;
- (f) Provide for integration of instrument/payload;
- (g) Support the flight operations;
- (h) Coordinate with Co-Investigators, other related investigations, and the payload integrator;
- (i) Assure safety, reliability, and quality; and
- (j) Control cost.
- (viii) For proposals seeking NASA funding:
 - (a) Planned participation by small and/or minority business in any subcontracting for instrument fabrication or investigative support functions;
 - (b) Commitments for all major facilities, laboratory equipment, and ground-support equipment (GSE) (including those of the investigator's proposed contractors and those of NASA and other U.S. Government agencies) essential to the experiment in terms of its system and subsystems, distinguishing insofar as possible between those in existence and those that will be developed in order to execute the investigation; and
 - (c) The acquisition of new facilities and equipment with the lead time involved and the planned schedule for construction, modification, and/or acquisition of the facilities.

2. Schedule.

This section of the proposal should provide a project schedule covering all phases of the investigation that demonstrates how the instrument delivery dates and the LRO launch date will be met, including appropriate investigation delivery milestones. The schedule should include, at a minimum, the proposed major project review dates, and the periods for instrument development, instrument-to-spacecraft integration and test, mission operations, data analysis, and implementation of the E/PO program. The schedule should also show the proposed project's critical path from the beginning of Phase A to launch and should be supported by a brief explanation of the principal factors driving this schedule path. The proposed funded schedule reserve against delivery of the flight instrument must be clearly identified (also see Section 5.6 of this AO). In addition, the specific tasks planned for Phase A/B should be discussed and, if applicable, correlated to tasks in the contractual Statements of Work (SOW) discussed in Part 4 of this appendix.

All schedules must be specific enough to show the logical and timely pursuit of the work, accompanied by a description of the investigator's work plan and deliverables to the LRO Project, and the responsibilities of the Co-Investigators. The proposal must also discuss the specific roles that each of the participants and their institutions intend to play in the investigation, including a statement of the

portion of time that each participant expects to devote to the investigation and of the institutional resources on which each can draw.

Near term milestones that shall be accommodated in both schedule and cost proposal development are as follows:

- 1.) Participation at a measurement investigator's kick-off meeting held at GSFC within 30 days following selection.
- 2.) Preparation of investigation products for, and participation in the Instrument Accommodation Review (IAR), see PIP section 6.3 & 6.4.2).
- 3.) Working with the LRO project team to understand instrument accommodation issues, to provide a preliminary interface approach with the LRO spacecraft, and to perform engineering trade studies as needed to provide preliminary Interface Control Document (ICD) inputs.
- 4.) Initiation of subcontracts with Co-Investigator (Co-I) institutions and industrial partners as appropriate.
- 5.) Instrument PDR (I-PDR): The instrument provider will hold a I-PDR approximately 5 months after selection. The review allows the Project insight into the progress being made in the instrument design and comparison to the planned performance and estimated margins. The Functional & Performance Requirements Document (F&PRD) and the ICDs will be presented and discussed at the I-PDR. The completed F&PRD and ICDs will be summarized and presented at the mission PDR. (Refer to PIP Sections 6.3 & 6.4.2)

Conduct reviews and meetings:

- a.) Monthly Management Reviews (MMRs) [Section 7.3.1.1] starting at the end of the second month following selection; and
- b.) Measurement Team meetings to complete measurement requirement definitions.
- c.) IAR and I-PDR as described above.

3. Costs

Proposers must present their estimation of the total life cycle costs for the investigation for Phases A-E. This discussion must provide sufficient depth and correlation with planned project activities to allow the reliability of these estimates to be judged. This discussion must include the basis of the cost estimates provided and a substantiation of the cost estimation methodology used. Recommended cost reserves and cost reserve derivation and management should be discussed.

Cost Plan (For Proposals Requesting NASA OSS Funding). The proposal must provide a Cost Plan in which the anticipated costs for all phases of the investigation are discussed. It should also discuss all contributions citing sources and estimated cost values. This discussion, along with required supporting cost tables and data that may be included in an Appendix to the proposal (see Part 4 of this AO) where there is no page count limit. This Cost Plan will be used to assess the realism of the proposed costs. Top-level cost considerations and rationale must be discussed, and the costs for all work should be allocated and aligned with the proposed WBS as discussed in the Management section. All costs shall be consistent with the program maximum funding levels and constraints described in Section 5.7 of this AO.

In the Cost Plan, the methodology used to estimate all costs (analogies, parametric models, past experiences, cost estimating relationships, etc.) must be discussed. Budget reserve strategy, including recommended budget reserve levels as a function of mission phase and WBS element must also be discussed. Provide all assumptions used in developing cost estimates to facilitate reviewer's understanding of proposed cost estimates, particularly with regard to Government-furnished equipment and services and full cost accounting for Civil Service Personnel. The proposal must provide cost information (in FY 2005, fixed year dollars) for any items that provide heritage to the investigation.

Where NASA-provided services are used, NASA Civil Service labor and supporting NASA center infrastructure must be costed on the basis of Full Cost Accounting. NASA field centers may submit full cost proposals based on the instructions in the NASA Financial Management Manual, Section 9091-5, *Cost Principles for Reimbursable Agreements* (see LRO Library). If any NASA costs are to be considered as contributed costs, the contributed item(s) must be separately funded by an effort complementary to the proposed investigation and the funding sources must be identified. Any non-NASA Federal Government elements of proposals must follow their agency cost accounting standards for full cost. If no standards are in effect, the proposers must then follow the *Managerial Cost Accounting Standards* for the Federal Government as recommended by the Federal Accounting Standards Advisory Board.

Specifically the Cost Plan should distinguish tasks and costs required for the formulation phase (Phase A/B), for the implementation phase (Phase C/D), for the operations phase (Phase E), and for investigation total life cycle. Proposers should also submit budgets for Phase E (Mission Operations and Data Analysis) and describe their expected activities for measurement operations, generation, validation, archiving of data products, and data analysis activities leading to publication of the initial results of their investigations, as well as for E/PO activities (see further below) consistent with the Phase E cost guidelines given in this AO. Note that it is expected

that the funding profile for the proposed E/PO activities for this mission will normally peak during the Phase E of the program. The E/PO funding guidelines of 1-2 % of a propose PI Instrument investigation's budget refers to the mission as a whole and not each individual year. Selected proposers will have the flexibility to work within this overall funding envelope to develop a funding profile that optimizes the output of the proposed E/PO effort. All cost data provided must be provided in the formats and tables shown in Appendix 1 of Part 4 of the proposal.

Cost and Pricing Data. In addition to the Cost Plan, proposers should submit cost data for all Phases summarized by category as enumerated in section B.2.7 below and in addition time-phased by month for Phases A/B. This cost data will be used to facilitate timely placement of a contract for a selected proposal and enable pre-contract cost authorizations for initial work. The supporting Cost Tables and backup data as discussed in Section 2.7 of Part 4 of this Appendix may be included in an appendix to the proposal where there are no page count limits; however, top-level numbers and rationale should be discussed in this section.

B.2.6 Part 3: Education/Public Outreach and Small Business Plans

Within the specified page limit for the text (see Table 1 in this Appendix) and consistent with the guidance given in Section 5.3.1 and Appendix C of this AO, discuss the plans and commitments for the following subjects:

Education/Public Outreach. Describe plans for Education and Public Outreach activities of the proposed investigation, arrangements for appropriate partners and alliances, implementation of proposed activities, and dissemination of any products and materials, including a statement of intent and plans (budget and personnel) for participation in the GSFC Lunar Robotic E/PO Program. See Appendix C for further guidance on the content of the E/PO section of the proposal. This section should also include the E/PO Budget Summaries given in Appendix C with a single Budget Summary form for each year of the proposed effort, a Budget Summary for the total effort and, without page limit, sufficient budget narrative to fully understand the entries and demonstrate how the budget is linked to and supports the proposed program of activities.

Small Business Plans. Within a page limit given in Table 1 in this Appendix and consistent with the specific guidance given in Section 5.3.2 and Paragraph XIII of Appendix A of the AO, respectively, discuss the proposed small business plan.

B.2.7 Part 4: Appendices

The following additional information is required to be supplied with the proposal as Appendices. They have no specific page limits but their length should be minimized. No other appendices are permitted.

1. Cost and Budget Tables and Data. All detailed cost and budget data must be contained in this appendix, including the cost proposal for a contract. In addition, specific required cost data will be provided for evaluation purposes, as follows: the estimated cost of the investigation that encompasses all proposed activities, divided into two budgets, one for the development Phases A-D (up through L + 30 days) and one for the operations Phase E. The budget line items must correspond to the elements at the second level of the proposed Work Breakdown Structure with one budget line summarizing the E/PO effort. At a minimum, to ensure uniformity in submittals, the Budget Summary forms (Tables 2, 3, and 4 below) must be completed and included in the proposal. Additional budget information aligned with the proposed WBS in the format of the proposer's institution may be included without page limit, although brevity is requested.

For budgetary costing purposes (estimation of Fiscal Year costs in Real Year Dollars), the NASA inflation index is given in the Table 5 below.

TABLE 2
TOTAL INSTRUMENT COST FUNDING PROFILE
FY Costs in Real Year Dollars (to nearest thousand), Totals in RY and Fixed Year '05 Dollars

Cost Element **	Formulation		SUBTOTAL		Implementation			SUBTOTAL		TOTAL	
	FY1	FYx	Formulation*	FY05\$	FY1	É	FYz	Implementation*	FY05\$	LIFE CYCLE	FY05\$
Start to Launch + 30 Days (Phases A/B/C/D)	Enter each cost element										
Phase A Concept Study											
Proj. Mgmt/Miss. Analysis/Sys. Eng.											
Instrument Development											
<i>Instrument A</i>											
Instrument Mgmt/Sys Eng											
Hardware/Software Development											
Integration, Assembly and Test											
Other (1)											
<i>Instrument B</i>											
Instrument Mgmt/Sys Eng											
Hardware/Software Development											
Integration, Assembly and Test											
Other (1)											
<i>Instrument C</i>											
Instrument Mgmt/Sys Eng											
Hardware/Software Development											
Integration, Assembly and Test											
Other (1)											
Instrument Suite-Level Integration, Assembly and Test											
<i>Subtotal - Instruments</i>											
Support to S/C Integration and Test											
Launch Ops (Launch +30 days)											
Science Team Support											
Pre-Launch GDS/MOS Development											
DSN/Tracking											
Other (2)											
<i>Subtotal Phases A-D before Reserves</i>											
Instrument Reserves											
Other Reserves											
Total Phases A/B/C/D											
Launch + 30 Days to End of Mission (Phase E)	Enter each cost element										
Mission Operations & Data Analysis (including Project Management)											
DSN/Tracking											
Other (2)											
<i>Subtotal Phase E before Reserves</i>											
Reserves											
Total Phase E											
Launch Services											
Total NASA Cost											
Contributions (2)											
Total Contributions											
Total Mission Cost =											

(1) Other: list items not specific to individual instruments separately

(2) Specify each item on a separate line; include Education & Public Outreach, facilities, etc.

* Note: Formulation = Phase A + B; Implementation = Phase C + D + E; all numbers must map to Tables 3 and 4 which are summarized by phase and by WBS.

** See **Program Cost Elements** document in AO Library

TABLE 3
MISSION PHASE SUMMARY OF NASA OSS COST
FY Costs in Real Year Dollars (to nearest thousand); Totals in RY and FY 05 Dollars

Cost Element	FY1	FY2	FY3	É	FYn	TOTALS	
						RY \$	FY05 \$
Phase A Concept Study							
Additional Phase A (if required)							
Phase B							
Phase C/D							
Phase E							
Launch Vehicle/Launch Services							
Total OSS Mission Cost							
Contributions							
Total Mission Cost							

TABLE 4
PROJECT-SPECIFIC WBS SUMMARY OF NASA OSS COST
FY Costs in Real Year Dollars (to nearest thousand); Totals in RY and FY 05 Dollars

Project WBS Elements ¹	Phase A/B			Phase C/D			Phase E			TOTALS	
	FY1	FY2	Subtotal	FY CD1	FYE	Subtotal	FY E1	FYE	Subtotal	RY \$	FY05 \$
WBS 1											
1.1											
1.2											
1.n											
WBS 2											
2.1											
2.2											
2.n											
WBS 3											
3.1											
3.2											
3.n											
WBS 4											
4.1											
4.2											
4.n											
WBS N											
N.1											
N.2											
N.n											
Other											
Launch Services											
Total OSS Mission Cost											
Contributions											
Total Mission Cost											

¹ Details should be provided to the lowest level of the WBS the project is currently using; The WBS should include lower-level elements comprising each individual instrument element; all figures must still map to Table 1.

TABLE 5. NASA New Start Inflation Index.

Fiscal Year	2005	2006	2007	2008	2009	2010	2011
Inflation Rate	0%	2.0%	2.1%	2.1%	2.0%	2.0%	2.0%
Cumulative Inflation Index	1.0	1.020	1.041	1.063	1.085	1.107	1.129

2. Resumes. Resumes (curriculum vitae) must be provided for each member of the investigation's team identified in Part 1 and for other key personnel (such as the Instrument Project Manager, Systems Engineer, or individuals leading the E/PO work) identified in Part 2 or 3. Each resume must clearly demonstrate experience related to the job the individual will perform on the proposed investigation.

3. Statements of Commitment from Co-Investigators. Every Co-I and Collaborator (including E/PO personnel involved in the investigation), whether from a U.S. or a non-U.S. institution (including the PI's own institution), who is identified as a participant in the proposal must submit a brief, signed statement of commitment that acknowledges his/her participation. Multiple Co-Is and/or Collaborators may sign a single statement so long as each is identified by their institution. Such statements may be facsimiles so long as an original signature is included or an E-mail so long as the identity of the sender is provided as a typed signature as well as by the header of the message. A sample such statement follows:

"I(we) acknowledge that I(we) am(are) identified by name as Co-Investigator(s) [or Collaborator(s)] to the investigation entitled <name of proposal> that is submitted by <name of Principal Investigator> to the LRO AO, and that I(we) intend to carry out all responsibilities identified for me(us) in this proposal. I(we) understand that the extent and justification of my(our) participation as stated in this proposal will be evaluated during peer review in determining the merits of this proposal, and that, as a condition for possible selection, NASA may direct the removal of personnel from this team who are considered unwarranted for the successful completion of the proposed investigation."

4. Letters of Endorsement. Letters of endorsement must be provided from all non-OSS organizations (including foreign participants) offering goods and/or services (including the support of members of the measurement team) for the proposed investigation. Proposals lacking such letters, or including letters judged inadequate by NASA, may be rejected without further review. Proposals from foreign entities and proposals from U.S. organizations that include foreign participation must be on a no-exchange-of-funds basis and must be endorsed by the respective Government agency or funding/sponsoring institution in the country from which the foreign entity is proposing. Such letters of endorsement must be signed by institutional and/or Government officials authorized to commit their organizations to participation in the proposed investigation. All letters of endorsement are to be included in and submitted with the proposal. Copies of faxed letters from non-U.S. participants may be used in the submitted proposals as long as original signed letters are received within a week of the due date for proposals, as specified in Section 8 of the AO. See also Section 5.11.1 of the AO for further information on non-U.S. proposals.

5. Draft International Participation Plan and Discussion on Compliance with U.S. Export Laws and Regulations. Investigations that include international participation,

either through involvement of non-U.S. nationals and/or involvement of non-U.S. entities must include a section discussing compliance with U.S. export laws and regulations; e.g., 22 CFR 120-130, *et seq.* and 15 CFR 730-774, *et seq.*, as applicable to the scenario surrounding the particular international participation. The discussion must describe in detail the proposed international participation and is to include, but not be limited to, whether or not the international participation may require the proposer to obtain the prior approval of the Department of State or the Department of Commerce via a technical assistance agreement or an export license, or whether a license exemption/exception may apply. If prior approvals via licenses are necessary, discuss whether the license has been applied for or, if not, the projected timing of the application and any implications for the schedule. Information regarding U.S. export regulations is available through Internet URLs <http://www.pmdtc.org/> and <http://www.bis.doc.gov/>. Proposers are advised that under U.S. law and regulation, spacecraft and their specifically designed, modified, or configured systems, components, parts, etc., such as the instrumentation being sought under this AO, are generally considered "Defense Articles" on the United States Munitions List and, therefore, subject to the provisions of the International Traffic in Arms Regulations, 22 CFR 120-130, *et seq.* (see Section 5.1.1).

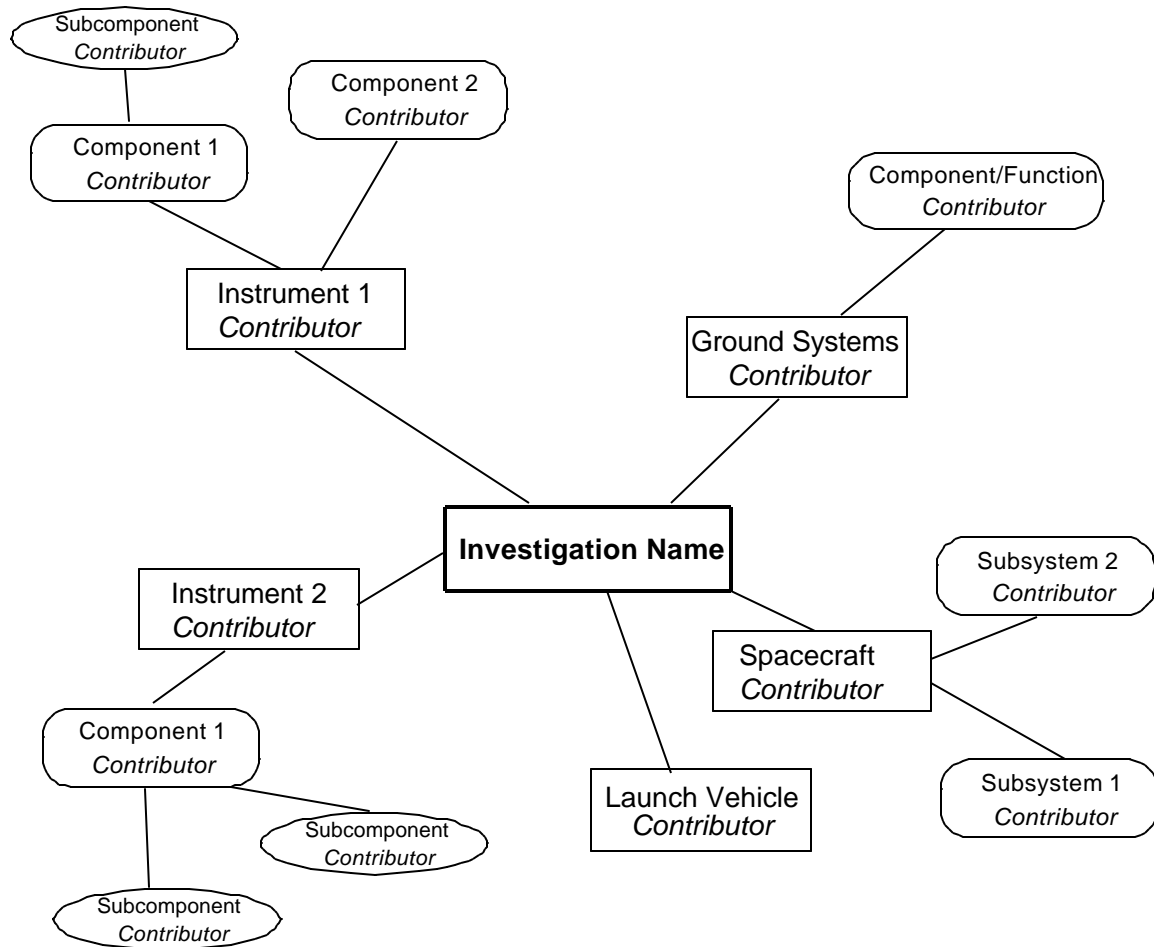
6. Summary of Proposed Cooperative Contributions. As provided in section 7.1 of the AO, each proposal will be evaluated for feasibility of the proposed approach for implementation, including cost risk (see also section 5.11). Therefore, proposals that include cooperative contributions, whether foreign or domestic, may be attributed risk during the evaluation process if (i) the approach does not have clear and simple technical and management interfaces, (ii) the proposal does not provide evidence that the contribution is within the management and technical capability of the contributing partner, and/or (iii) the proposal does not include a firm commitment for each contribution. Cooperative contributions are defined to be those that are to be provided to the proposed investigation from a domestic or foreign partner on a no-exchange-of-funds basis. In order to aid NASA in conducting an equitable assessment of risks from cooperative contributions, each proposer must provide, in addition to the commitment letter from funding sponsors of all cooperative contributions, two additional items:

- An “exploded diagram” of the investigation (see example below) that provides a clear visual representation of cooperative contributions incorporated in the proposed implementation approach. All cooperative contributions, including those that will require an international agreement or interagency memorandum of agreement, must be shown in this diagram using a unique name for the contribution as well as the identity of the contributing entity. However:

- i. Since this LRO AO does not solicit proposals for the spacecraft, launch vehicle or services, or ground operations or facilities, these items need not be shown;
- ii. Collaborations such as joint data analysis that do not involve contribution of flight hardware or other items critical to the investigation need not be shown; and

- iii. Foreign or domestic goods and services purchased using NASA funds are not cooperative contributions and need not to be shown.

Generic Example “exploded diagram”.



• A supporting table with more information that elaborates each cooperative contribution shown in the exploded diagram. This table must include, for each contribution, the following information:

- i. A unique name identifying the contribution (matching the name on the exploded diagram);
- ii. The identity of the providing entity, whether foreign or domestic;
- iii. For foreign contributions, the identification of the funding sponsor, if different from the entity identified in item (ii) above; and
- iv. The approximate value of the contribution, in U.S. dollars (i.e., the estimated cost to NASA to replace the contribution if it were not provided as planned).

7. Cost and Pricing Data and Documentation for Contract Implementation. To facilitate and expedite contract implementation, proposals must contain the following documentation:

Point of Contact. Identify the contract manager/program coordinator responsible for direct interaction with the GSFC Contracting Officer.

Detailed Cost Proposal Information. The proposal must contain the cost information requested below for all Investigation Phases, summarized by cost element for all Phases, time phased by month and fiscal year for Phases A and B, and time phased by fiscal year only for Phases C/D and E. Labor should be proposed by work hour, not work month. A breakdown of all labor categories and associated hours to perform the Investigation must be provided. A copy of the data must be provided on a CD in Microsoft Excel or Excel-compatible format.

Other guidance for developing this cost proposal includes:

Work Breakdown Structure. A Work Breakdown Structure (WBS) must be included which is consistent with the plans set forth in the Technical Approach and Management sections of the investigation's proposal and the Statement of Work provided as Appendix 8 to the investigation proposal.

Workforce Staffing Plan. A workforce-staffing plan that is consistent with the WBS must be provided that includes all team member organizations and that covers all management, technical (measurement and engineering), and support staff. The workforce-staffing plan should be phased by month. Time commitments for the PI, PM, and other key personnel should be clearly shown.

Proposal Pricing Technique. The process and techniques used to develop the cost proposal must be provided that includes a description of the cost-estimating model(s) and techniques used in the cost estimate. The heritage of the models and/or techniques applied to this estimate must be discussed, including any known differences between missions contained in the model's database and key attributes of the proposed mission and the assumptions used as the basis for the investigation cost. Assumptions that are critical to cost sensitivity in the investigation must be identified, as well as any "discounts" assumed in the cost estimates for business practice initiatives or streamlined technical approaches. Details of how these items have been incorporated in the cost estimate and will be managed by the investigation team must be given.

Cost Elements Breakdown and Supporting Data

To effectively evaluate space flight hardware development cost proposals, NASA requires cost detail and supporting evidence stating the basis for the estimated costs. The categories of proposed cost shall include the following:

Direct Labor. List by labor category, with labor hours and rates for each. Provide actual salaries of all personnel, including civil service labor, and the percentage of time each individual will devote to the effort. NASA civil service

labor and supporting NASA Center infrastructure must be proposed on a full cost accounting basis.

Overhead. Include indirect costs that, because of their inclusion for common or joint objectives, are not readily subject to treatment as a direct cost (usually this is in the form of a percentage of the direct labor costs).

Materials. Provide the total cost of the bill of materials, including estimated cost of each major item, including lead time of critical items.

Subcontracts. List subcontracts over \$5,000, specifying the vendor and the basis for estimated costs and including any baseline or supporting studies.

Special Equipment. List special equipment with lead and/or development time, including number of units and types.

Travel. List estimated number of trips, destinations, duration, purpose, number of travelers, cost, and anticipated dates.

E/PO. Summarize the expected E/PO costs. Note that the Budget Summary forms and narrative (see Appendix C of this AO) required for E/PO activities should provide enough information for a complete understanding of those costs (also see Section 2.6, Part 3, of this Appendix B).

Other Costs. Provide all direct or indirect costs not covered elsewhere.

General and Administrative Expense. Include the expenses of the institution's general and executive offices and other miscellaneous expenses related to the overall business.

Contribution Costs. Contributions of any kind, whether cash or noncash (e.g., property and services) for the proposed investigation by space organizations other than OSS are welcome but must be shown as part of the Total Cost of the proposed investigation. Values for all contributions of property and services shall be established in accordance with applicable cost principles. A letter of endorsement that provides evidence that the responsible institution and/or Government officials are aware and supportive of the proposed investigation, and will pursue funding for the investigation if selected by NASA, must be submitted with the proposals for all U.S. contributions. For all contributions the constraints of Section 5.1 of this AO apply. For non-U.S. contributions to proposals, also see Section 5.11 of the AO. The cost of contributed hardware should be estimated as either: (i) the cost associated with the development and production of the item if this is the first time the item has been developed and if the mission represents the primary application for which the item was developed; or (ii) the cost associated with the reproduction and modification of the item (i.e., any recurring and mission-unique costs) if this item is not a first-time development. If an item is

being developed primarily for an application other than the one in which it will be used in the proposed investigation, then it may be considered as falling into the second category (with the estimated cost calculated as that associated with the reproduction and modification alone).

The cost of contributed labor and services should be consistent with rates paid for similar work in the offeror's organization. The cost of contributions does not need to include funding spent before the start of the investigation (before completing a contract with NASA). The value of materials and supplies shall be reasonable and shall not exceed the fair market value of the property at the time of the contribution.

If any NASA costs are to be considered as contributed costs, the contributed item(s) must be separately funded by an effort complementary to the proposed investigation, and the funding sources must be identified and substantiated with a letter of endorsement from the provider. Other Federal Government elements of proposals must follow their agency cost accounting standards for full cost. If no standards are in effect, the proposers must then follow the Managerial Cost Accounting Standards for the Federal Government as recommended by the Federal Accounting Standards Advisory Board.

Fee. The proposal must list any applicable fee for the submitting organization. Incentives on major contracts to the PI investigation are to be based, at least in part and as appropriate, on performance under the contract.

Summary of Cost Reserves. A time phased summary of cost reserves shall be presented by Phase for all WBS elements that contain reserve. The proposed cost by WBS element, the amount of reserve for each WBS element, and the reserve as a percentage of the total cost for each WBS element shall be provided. A rolled up summary of cost reserves, which represents a total of reserves for all WBS elements shall also be provided.

Descope Options. The cost savings associated with each descope option presented in the Cost Constraint section shall be time-phased and provided for all Investigation phases.

Funding Profile. Provide a profile of required NASA-funding by fiscal year. The funding profile is derived from the cost profile that is the basis of the proposal. The funding for a given fiscal year is determined from the estimated costs in that year, less the uncosted funding carried over from the previous fiscal year, plus the forward funding needed to cover the costs of the first two months of the following fiscal year, plus the forward funding required for "unfilled orders". Unfilled orders refer to long lead items where funding is usually required in advance of the incurrence of cost. Because of forward funding, costs will not equal funding in any given fiscal year. Total costs shall equal total funding at program completion.

Long-Lead Procurements. Proposals shall identify and provide information on the cost and schedule requirements for each long lead purchased part of assembly. Long lead is identified as any purchased item that would impact the investigation development critical path if not purchased within four months following selection.

Exceptions to Terms and Conditions. In order to expedite contract awards, proposers are required to review the model contract terms and conditions for educational institutions or commercial organizations, as appropriate, which can be found in the LRO Library (<http://centauri.larc.nasa.gov/lro/library.htm>). Proposers shall specifically identify any exceptions and/or proposed changes to the contract terms and conditions (i.e. clauses) contained within the appropriate contract document. If no exceptions are taken, a statement to that effect shall be included in the proposal and the sample generic contractual documents will be used as the basis for selected Investigation contract formulation. All proposed contractual documentation, if accepted by NASA, shall be considered executable upon selection. NASA reserves the right to negotiate all contract terms and conditions following Investigation selection.

Each proposer shall submit a list of contract deliverables for Investigation Definition and Preliminary Design, Investigation Detailed Design, Build, Test, and Integration, and Investigation Operations and Data Analysis. Submitted contract deliverable lists shall be consistent, in content, with sections 6.3 and 6.4 of the Proposal Information Package (PIP) and consistent, in format, with Section B.1 of the model contract.

8. Contractual Statement(s) of Work. The Statement of Work must include general task statements for the development phase and for the operations phase of the investigation. All Statements of Work must include the following as a minimum: Scope of Work, Deliverables (including measurement data), and Government Responsibilities (as applicable). Statements of Work need not be more than a few pages in length. If more than one contractual arrangement between NASA and the proposing team is required, funding information must be provided that identifies how funds are to be allocated among the organizations.

9. Instrument Accommodation Requirements Summary. The LRO Project Office has endeavored to create an investigation accommodation environment that is flexible and robust to the interface and infrastructure requirements of the investigations that respond to this AO. Wherever possible, the Project has provided a range of interface options (e.g., a choice of data bus options) and locations within the baseline project-provided interfaces at each location.

This appendix of the proposal must summarize the accommodation requirements for proposed instrumentation following the entries in Table 6 below, which includes but is not limited to: Instrument Mass, Total Mass, Mass by Proposed Location (provide dimensioned drawing); Instrument Power; Power- Peak, Operational, and Standby; Power - Average Operational, Standby, and Non-operating (if applicable); Power

Profile (provide a typical operational timeline); Thermal Requirements Instrument survival temperature range Instrument operating temperature range; Specify if non-operational thermal maintenance for instrument survival may be required; Scan Platform Pointing Requirements; Output Data Volume Average Profile for typical operational timeline; Radiation sources, list material and strength Source(s) internal to instrument Source(s) required for test and calibration activities at GSFC. Descriptions of any other pertinent accommodation information and/or instrument unique items may be added to this table. The PIP provides further guidance on how to describe and provide trade studies and cost estimates for instrument unique accommodation assumptions. Proposers may include description and trades information for any of these instrument unique accommodation approaches in their proposal appendix response to this required Instrument Accommodation Requirements Summary.

Table 6: Instrument Accommodation Requirements Summary

Item	Description	Proposed Payload Accommodation
Instrument Mass (CBE plus proposed reserves)		
Total Mass		
Volume/envelope		
Please provide dimensioned drawing		
Instrument Power		
Power- Peak		
Operational		
Standby		
Power – Average		
Operational		
Standby		
Non-operating, if applicable		
Power Profile		
Please provide a typical operational timeline, including typical data collect duration(s)		
Pointing Requirements: Precision / Repeatability / Stability / Timing		
Azimuth		
Elevation		
Thermal Requirements		
Instrument survival temperature range		
Instrument operating temperature range		
Specify if non-operational thermal maintenance for instrument survival may be required		
Output Data Volume		
Average		
Profile for typical operational timeline		
Lifetime limiting Consumables		
List consumables & associated limits		
Known Operating Constraints		
(e.g., daylight only, dark only, cold only, no sun looks, etc.)		
Radiation sources, list material and strength		
Source(s) internal to instrument		
Source(s) required for test and calibration activities at GSFC		

10. NASA PI Hardware Selection Process (applicable only for proposals that have NASA employees as Principal Investigator). Proposals headed by NASA employees as the Principal Investigators must contain the following information concerning the process by which non-Government participants were included in the proposal: (i) indicate that the supplies or services of the proposed non-Government participant(s) are available under an existing NASA contract; (ii) make it clear that the capabilities, products, or services of these participant(s) are sufficiently unique to justify a sole source acquisition; or (iii) describe the open process that was used for selecting proposed team members. While a formal solicitation is not required, the process cited in (iii) must include at least the following competitive aspects: A notice of the opportunity to participate to potential sources, submissions from and/or discussions with potential sources, and the objective criteria for selecting team members among interested sources. The proposal must also address how the selection of the proposed team members followed the objective criteria and is reasonable from both a technical and cost standpoint. The proposal must also include a representation that the Principal Investigator has examined his/her financial interests in or concerning the proposed team members and has determined that no personal conflict of interest exists. Finally, the proposal must provide a certification by a NASA official superior to the Principal Investigator verifying the process for selecting contractors as proposed team members, including the absence of conflicts of interest.

If a proposed team member will perform a substantial portion of the measurement investigation, selection of the NASA PI's proposal under this AO satisfies competition requirements for the team member's proposal including any hardware or routine support service to be provided by the team member. If a non-Government participant is only providing hardware or routine support services, a separate competition must take place or a noncompetitive procurement approved according to regulations.

11. References. This appendix provides a list of any reference documents used in preparing the proposal. Note that if the documents themselves are submitted with the proposal, they must be included within the prescribed page count; that is, they cannot be submitted as part of this or any other appendix.

12. Acronyms and Abbreviations. A list that defines all acronyms and abbreviations in the proposal should be included to facilitate the review and evaluation.